### *The United States Leads in World Strawberry Production*

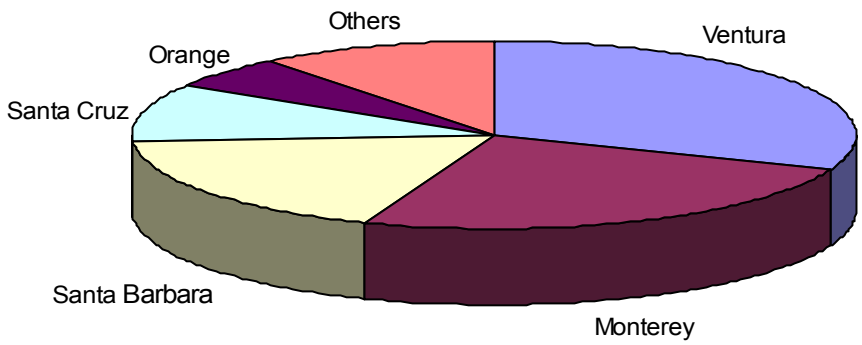
The United States is the world's largest producer of strawberries, accounting for over a quarter of total production annually throughout most of the 1990s and in more recent years. The U.S. strawberry industry's annual production capacity is supported by average yields which rank highest in the world and total harvested acreage that rank second largest in the world, next to Poland. Strawberry production areas are also relatively large in countries like the Russian Federation, Turkey, Serbia and Montenegro, Germany, and Spain. However, production capacities in these countries, including Poland, but with the exception of Spain, are very much limited by the relatively low annual yields achieved from their crops. Spain, Korea, Japan, and Mexico complete the list of the world's five leading strawberry producers, and together they produce over a quarter of overall production.

### *California is the Center of U.S. Strawberry Production*

Strawberries could be grown in a wide range of climates and for this reason, commercial production is reported in many States throughout the United States. The growing climate in California, however, is ideal for the crop for it provides a moderate year round temperature of warm days and cool foggy nights and low humidity. This suitable growing environment, along with the adoption of an annual planting system and development of new varieties that better adopt to the cultural systems followed by the growers, has led to a high concentration of commercial production in the State. Presently, higher output per acre on over 60 percent of the U.S. strawberry acreage enables California to produce close to 2.0 billion pounds of strawberries annually, accounting for over 85 percent of U.S. strawberries. This share of production is up from 74 percent in 1980 and 79 percent in 1990. Florida and Oregon rank a distant second and third with about 7 percent and slightly over 1 percent of overall production. Other contributing States, based on annual production data published by the National Agricultural Statistics Service, include Michigan, New York, North Carolina, Ohio, Pennsylvania, Washington, and Wisconsin.

California's strawberry production extends from San Diego to San Francisco. Most of its production occurs in the southern and central coastal counties, with only a small amount produced in the inland areas. Based on the County Agricultural Commissioner's Data published by the California Agricultural Statistics Service, Ventura, Monterey, Santa Barbara, Santa Cruz, and Orange counties together account for over 85 percent of California's strawberry harvested area and about 90 percent of its strawberry production (fig. 4). Having the largest harvested area for fresh-market strawberries in California, Monterey County is the State's biggest supplier of strawberries to the fresh market. Fresh-market production in Ventura County, however, has grown more rapidly both in terms of harvested area and yields since the early 1990s. Moreover, processing strawberry production has declined substantially in Monterey County while in Ventura County it has increased. With expansion in both its fresh and processing outputs, Ventura County is California's largest strawberry producer, supplying about one-third of the State's

Figure 4.
**Top five strawberry-producing counties in California, 2003**




Source: County Agricultural Commissioner's Data.

annual strawberry volume. Monterey is the second largest producer, growing about one-quarter of the State's crop.

Strawberry harvesting in California starts in the south and moves north. The South Coast growing region, which includes San Diego, Orange, Los Angeles, and western Riverside counties, begins harvesting in January and continues until June, with fresh-market shipments usually peaking in April. The Oxnard area, which covers Ventura County just north of Los Angeles, also supplies fresh-market strawberries from January through June and their deliveries to processors run from April through July. During 2003, Ventura County accounted for more than half of California's processing strawberries. The Santa Maria growing region, which encompasses the coastal regions of San Luis Obispo and northern Santa Barbara counties, begins production in March and continues through July. Deliveries to processors in the Santa Maria area continue through August. The cities of Watsonville and Salinas in Santa Cruz and Monterey counties together make up almost half of the State's strawberry acreage. Shipments from these northernmost growing areas run from April through November, with peaks around May and June.

## *Florida Supplies Winter Strawberries*

Strawberry is the most important berry crop produced in Florida. The most recent Census of Agriculture reported the presence of 217 farms growing strawberries on over 6,000 acres in Florida, representing about three-quarters of the State's total berry acreage in 2002. There were 126 more farms growing blueberries in Florida, but there were close to 5,000 more acres in strawberry production which more than made up for the fewer number of strawberry farms. Florida produces over 160 million pounds of strawberries annually. Strawberry production in the State has generated an average farm value of $154 million over the last 3 years (2002-2004). For the same period, the average farm value of Florida's blueberry production amounted to $21 million.

Florida's strawberry production starts in November and continues through May of the following year, with heaviest shipments around February and March. Close to 90 percent of Florida's strawberry acreage is near Plant City in Hillsborough

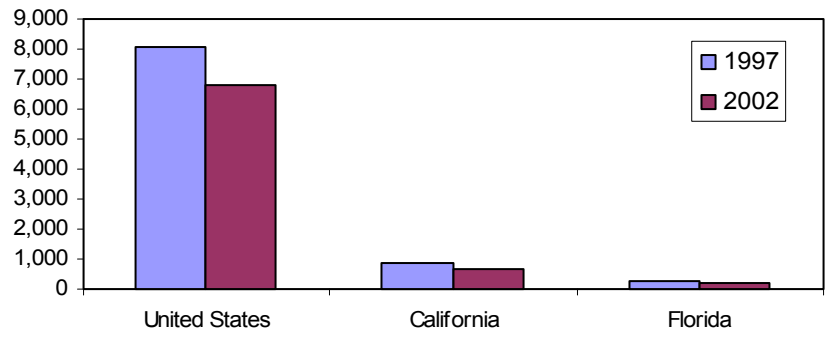
County, which is in west central Florida. Strawberries are also grown in adjacent counties of Pasco, Polk, and Manatee, as well as in Collier, Palm Beach, and Dade counties in south Florida, and Bradford County in the north.

### *U.S. Strawberry Farms Decline in Number*

The 2002 Census of Agriculture reports some changes in the structure of the U.S. strawberry industry at the grower level from 1997, the previous census year. The number of farms growing strawberries in the United States declined from 8,038 farms in 1997 to 6,799 farms in 2002, with most States reporting declines (fig. 5). While the overall industry experienced a decline in farm numbers, strawberry acreage has remained relatively constant at nearly 56,000 acres (fig. 6). With the industry being able to maintain total production area with fewer growers suggest that farm operations are becoming larger. This may not apply individually to all the strawberry-producing States, specifically to those States where production acreage has declined along with farm numbers. Moreover, the industry is still comprised mostly of small farm operations, but the bigger farms generate most of the production. Only about 4 percent of all of the Nation's strawberry growers in 2002, each producing on 50 acres or more, accounted for 60 percent of total harvested acres.

Figure 5.

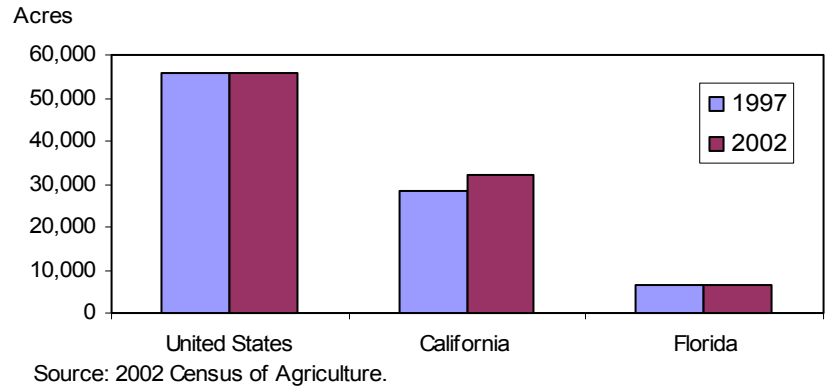
**Number of U.S. farms growing strawberries declining**




Source: 2002 Census of Agriculture.

Figure 6.

**Strawberry harvested acreage increasing in California**




Source: 2002 Census of Agriculture.

California plays a dominant role in the U.S. strawberry industry. While it only housed 10 percent of all the U.S. farms growing strawberries in 2002, it accounted for more than half of the Nation's strawberry acreage. Strawberry farms in California declined in number, from 882 in 1997 to 684 in 2002. California's strawberry acreage, however, grew 13 percent, offsetting declining acreage in most other States.

Although a majority of the strawberry farms in California are small operations, there has been an increase in the number of medium and large-sized operations between 1997 and 2002. The number of farms with less than 25 acres in production declined in number over this time period, while the number of farms with 25 acres or more increased. The expansion in acreage among farms with 50 to 99.9 acres grew more rapidly than even larger farms, those with 100 acres or more. In 2002, farms with 50 to 99.9 acres accounted for 21 percent of the State's strawberry acreage while farms with 100 or more acres made up 62 percent.

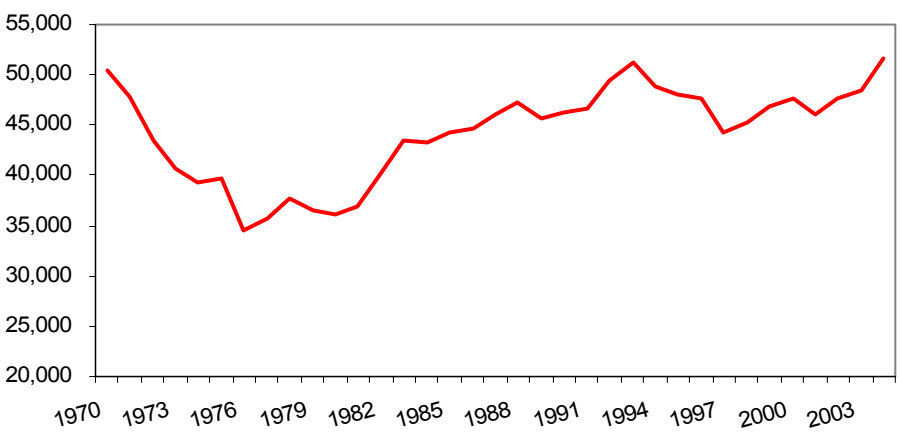
Similar to California, the number of farms with strawberry production in Florida is declining, but production area is expanding, indicating a shift to larger farm operations. Strawberry farms in Florida declined from 271 farms in 1997 to 217 farms in 2002. During this period, production acreage grew by nearly 3 percent, to over 6500 acres. California's strawberry industry appears to be more aggressive in shifting to larger production operations as farm numbers there declined more rapidly than in Florida and acreage expansion grew at a faster pace. Over 80 percent of the farms growing strawberries in Florida have less than 50 acres in production, but the larger operations, those with 100 acres or more, represent half of the State's strawberry acreage. Also, farms with 50 acres to 99.9 acres in production account for 20 percent of total acreage.

### *U.S. Strawberry Acreage Expanding*

The number of acres harvested to strawberries in the United States has increased at an average annual rate of 1.5 percent since the 1980s, following years of decline through much of the 1970s. Harvested area ranged from 36,050 acres in 1980 to 51,600 acres in 2004, a record high over the last 25 years (fig. 7). During the period from 1994 to 1997, harvested area trended downwards, mostly reflecting shrinking acreage in many strawberry-producing States, including California (1994 and 1997), Oregon, Michigan (1994-96), New York, Ohio (1995-97), and Washington (1994-95). Although not happening consistently year-to-year, harvested acreage in these States continued to diminish through 2004, except in California and Washington. Since 1998, strawberry harvested area in California grew at an average annual rate of 5.8 percent and in Washington the rate of growth was 4.6 percent. Florida's strawberry harvested acreage grew at a slower pace but was on an expansion path since the mid-1990s, increasing at an average annual rate of 2.1 percent. Meanwhile, Oregon's strawberry harvested area has dwindled to 2,400 acres in 2004, down from 6,200 acres in 1993, the largest reported acreage since 1990 when the State produced 5 percent of all the Nation's strawberries. Now Oregon produces just slightly over 1 percent of total production.

Figure 7.

**U.S. strawberry harvested acreage increasing**




Source: National Agricultural Statistics Service, U.S. Department of Agriculture.

Increased competition and high labor costs combined to diminish Oregon's strong presence as a strawberry producer. Oregon grows premium-quality strawberries destined mostly for processing, often blended with frozen berries from California to add quality and flavor to processed strawberry products. Unlike in California, strawberries in Oregon are grown as a perennial crop, with plants being replaced after 4 or 5 years. Fields are picked during the 2- to 3-week harvest period, completed around the end of June. Because production in California largely overshadows processing supplies in Oregon, finding enough field workers during the industry's short harvest period has remained a challenge among Oregon strawberry growers. This is especially true when harvesting older, lower yielding fields which could be less appealing to field workers who are paid on a per-pound basis. Many Oregon growers are also finding growing competition from Mexico where there is a labor cost advantage.

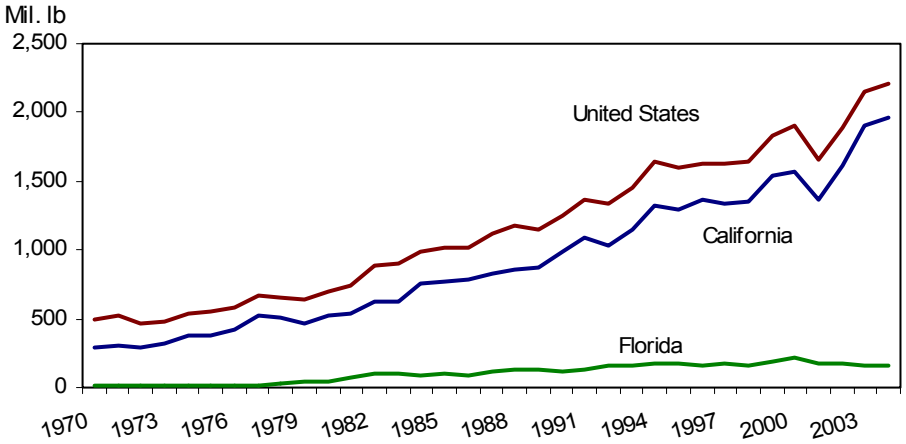
### *Expansion Continues in U.S. Strawberry Production*

Despite some year-to-year fluctuations, U.S. strawberry production has trended upwards since the 1970s, increasing at an average annual rate of 4.7 percent. Production growth was greatest during the 1980s when production averaged 970 million pounds annually, compared with an average of 558 million pounds during the previous decade (fig. 8). Declining acreage in the 1970s was reversed during the 1980s, and along with increasing average yields contributed to the production expansion during the 1980s. Production continued to increase during the 1990s and in recent years but at a slower rate than in the 1980s as output levels in many strawberry-producing States dropped. Output levels in California and Florida, however, were rising, driving the overall growth in production.

Production in California grew from 987.0 million pounds in 1990 to a record 1.96 billion pounds in 2004. Strawberry farms in California generate the highest yields per acre in the country, averaging over 40 percent higher than the national average in recent years. Over the last 5 years, yields averaged 59 pounds per acre, up from about 47 pounds during the early 1990s. In Florida, production grew from 116.6

Figure 8.

**Strawberry production rising**




Source: National Agricultural Statistics Service, U.S. Department of Agriculture.

million pounds in 1990 to a record high of 220.5 million pounds in 2000. Declining yields per acre in the succeeding years drove Florida's strawberry output lower, averaging 166.1 million pounds annually from 2001 to 2004.

### *Fresh Market Dominates Production*

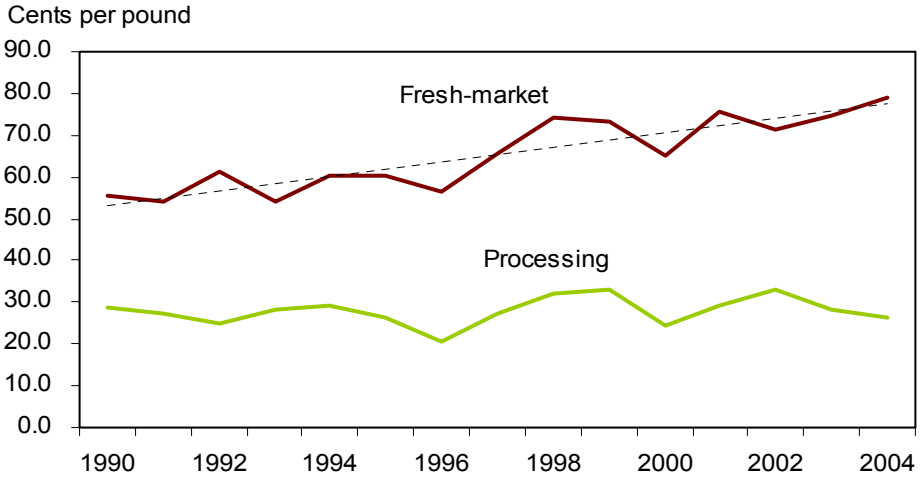
The bulk of U.S. strawberry production has always been for the fresh market. Over the last 5 years (2000-2004), fresh use accounted for 76 percent of the U.S. strawberry crop, with the rest processed. Most of the processing strawberries are frozen whole (individually quick frozen, IQF) or sliced. One of the major markets for frozen strawberries is the food service industry. The frozen berries are also packaged for retail sales and sold in bulk to manufacturers of jam and jelly, syrup, juice drinks, ice cream, yogurt, and bakery and confectionery products.

Since the nineties, grower prices for fresh-market strawberries have been trending up and averaging more than twice as high as processing strawberry prices (fig. 9). These higher grower prices, along with increasing demand, have stimulated greater production gains in the fresh market than for processing output where grower prices remained relatively flat. Total fresh-market production grew from 863.6 million pounds in 1990 to 1.69 billion pounds in 2004, increasing 94 percent over the period. For the same time period, total processing production grew 33 percent, reaching 519.3 million pounds.

About 75 percent of California's strawberry crop is destined for the fresh-market. Most other producing States also grow strawberries primarily for fresh use. For instance, all of Florida's production is for fresh use. Minor producing States, including New York, North Carolina, Ohio, Pennsylvania, and Wisconsin, also produce entirely for the fresh market. Only Oregon and Washington market the bulk of their production to the processing sector. Because of the relatively high volume produced in California, its strawberry growers have been receiving noticeably lower prices for their fresh use strawberries than other States since 1990,

Figure 9.

**U.S. fresh-market strawberry prices received by growers trending up**




Source: National Agricultural Statistics Service, U.S. Department of Agriculture.

averaging 62 cents per pound. Grower prices in Florida, North Carolina, and Oregon averaged 79 cents, 72 cents, and 82 cents per pound.

Approximately 93 percent of Oregon's 2000-2004 production was for processing while in Washington, 88 percent was processed. Even though processing is just a secondary use for strawberries in California, processing volumes in the State account for over 90 percent of the Nation's processing strawberries, driving their processing prices significantly lower than in Oregon and Washington. Oregon accounts for only about 6 percent of all of the Nation's processing strawberries and Washington, about 3 percent.

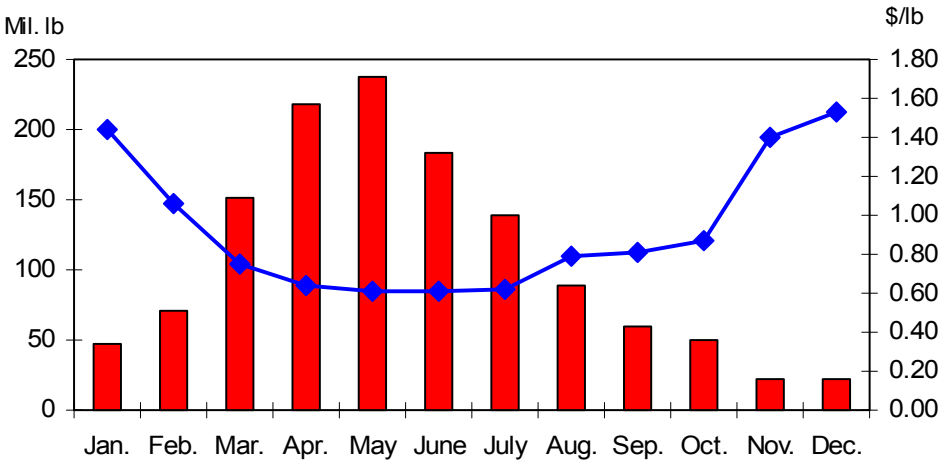
### *Fresh-Market Strawberry Shipments Peak in the Spring*

Fresh strawberries are now shipped in the United States year round, but shipments throughout the year still exhibit a strong seasonal pattern, increasing at the beginning of the year and through the spring and then declining from then on (fig. 10). The peak months for shipping continue to occur during April and May as it had in the 1980s and 1990s. Presently, about one-third of all available fresh-market strawberries in the United States are shipped during this 2-month period every year.

The seasonality in fresh strawberry supplies is reflected in the prices growers receive for their fresh-use berries. Fresh-market strawberry grower prices decline for about 4 months after January when strawberry shipments are building up. As shipments peak in May, prices bottom out and usually average over 30 percent lower than the average price for the season. Prices typically start to rise after this period as shipment volumes begin to decline seasonally. In recent years, grower prices averaged highest in November and January, when only between 2 and 4 percent of shipments occurred. Fresh strawberry retail prices follow quite closely the seasonal pattern in fresh-market strawberry grower prices. In April through June, when supplies are most available, retail prices are 15 to 25 percent lower than the annual average.

Figure 10.

**Monthly shipments and grower price for U.S. fresh-market strawberries**




Source: Agricultural Marketing Service and National Agricultural Statistics Service, USDA.

California was the source of 87 percent of U.S. fresh strawberry shipments during 2001-04, shipping at least 7.0 million pounds in each of the months. In 2001-04, about 88 percent of California's fresh strawberries were shipped between March and September, with 38 percent in April and May. Development of new varieties suitable for different growing conditions and increasing acreage in the northern growing areas continue to increase California marketings during the summer. Average California shipments during 2001-04 increased 43 percent in July and 28 percent in August, compared with the average shipments for those same months in 1991-94.

About 60 percent of Florida's fresh strawberry shipments every season occur in February (27 percent of total) and March (39 percent of total). With the aid of new varieties and cultural practices, however, Florida strawberry growers have increasingly shipped more supplies in November and December when California supplies are lowest and prices higher. Presently, shipments in November and December account for 13 percent of Florida's shipments for the season. About 10 to 15 years ago, November to December shipments accounted for 8 percent.

Mexico has long been a supplier of fresh strawberries to the U.S. market during the winter, with its season typically starting from November and extending through June. In recent years, however, small quantities have been shipped to the United States from Mexico during July through October. Strawberry supplies from Mexico continue to peak in March and April, accounting for over 45 percent of Mexico's strawberry shipments to the United States every year. About 7 percent of 2001-04 U.S. fresh strawberry shipments come from Mexico each year, up from 3 percent in 1991-94. Although this still appears to be a relatively small share of total U.S. fresh strawberry shipments, Mexico supplies about 97 percent of all of the fresh strawberries imported by the United States.

Because frozen strawberries are storable, supplies are more evenly distributed throughout the year. During the 2000-2004 seasons, the quantity of frozen strawberries available for domestic consumption as reported by the Processing Strawberry Advisory Board of California averaged 27 percent of annual disappearance in April-June, 26 percent in June-September, 24 percent in October-

December, and 23 percent in January-March. Deliveries of California strawberries to processors during the past 3 years started around mid-March when production in the State's southern growing areas was in progress. Deliveries usually continue through November with production from California's northernmost growing areas. Peak deliveries occur in May and June when fresh-market prices bottom out.

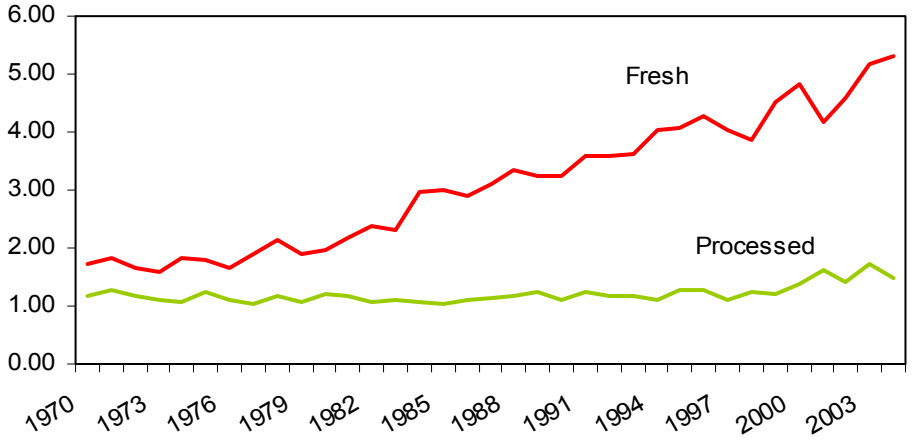
### *Fresh-Market Account for Most of the Growth In Strawberry Demand*

Americans are large consumers of strawberries. Increasing domestic supplies, year round availability, and growing consumer awareness of the nutritional benefits derived from this great-tasting fruit have helped stimulate U.S. demand for strawberries. U.S. strawberry consumption has risen sharply since the nineties, increasing 56 percent to a record 6.8 pounds per person in 2004. Most of the demand growth for strawberries in the United States, however, has been in the fresh market (fig. 11). Fresh-market consumption has increased more rapidly than processing as new varieties that have better shipping qualities as well as improved post harvest techniques aided in moving more high-quality berries to retail stores. Strawberries rank as the fifth most consumed fresh fruit in the United States, next to bananas, apples, oranges, and grapes. Strawberry consumption also out ranks the consumption of other berries, mostly because of its very big lead in production volume. In 2004, Americans consumed an estimated 5.31 pounds of fresh strawberries per person, up from 3.24 pounds in 1990 and the highest on record. In comparison, domestic consumption of processed strawberries (mostly frozen) increased from 1.12 pounds per person, fresh-weight equivalent, in 1990 to 1.48 pounds in 2004.

### *Fresh Strawberry Exports Rising*

Even though the United States leads the world in strawberry production, the bulk of its production is still consumed domestically. Spain is the largest exporter of strawberries in the world, followed by the United States. Spain exports, on average, 282 million more pounds of fresh strawberries annually to international markets

Figure 11.
**U.S. fresh strawberry consumption rising sharply**
Pounds per person, fresh-weight




Source: Economic Research Service, USDA.

compared with the United States. During 2001-2003, Spain accounted for 41 percent of the total quantity of fresh strawberries exported globally while the United States accounted for 15 percent. Completing the top five exporters are Mexico, Belgium, and France, with export shares ranging from 5 percent and 7 percent each.

Along with the robust growth in domestic fresh use, international demand for U.S. strawberries has also been strong. U.S. fresh strawberry exports have more than doubled in volume, increasing from 85.7 million pounds in 1990 to an average of over 150 million pounds annually in the past 3 years. Neighboring countries—Canada and Mexico—continue to absorb the bulk of these exports. Canada accounted for over three-quarters of all the fresh strawberries exported by the United States and Mexico, over 10 percent. Japan remains an important market for the U.S. strawberry industry, accounting for 6 percent of total export volume. Recent year U.S. fresh strawberry shipments to all three major markets have increased from 1990 shipment levels.

The United States exports fewer frozen strawberries than fresh. Since the late nineties, U.S. exports of frozen strawberries, declined from 59.6 million pounds in 1998 to 22.1 million pounds in 2004. Most of the decline is due to lower exports to Japan, its most important market. Japanese demand for U.S. frozen strawberries has diminished in recent years in favor of lower priced imports from China. Imported frozen strawberries are utilized primarily by Japan's jam industry where ingredient prices largely influence the competitive position of the manufacturers. U.S. exporters are finding it more difficult to compete in the Japanese frozen strawberry market as production in China has increased rapidly in recent years and the quality of the frozen berries has improved markedly. As China's strawberry production continues to expand, U.S. exporters will find it increasingly difficult to maintain their share of the Japanese market.

While U.S. frozen strawberry exports have declined, imports have increased sharply in the last 3 years. Fresh-market demand growth, both domestically and internationally, has influenced increased imports of frozen strawberries as more of the domestic crop got marketed for fresh use. The bulk of the imported frozen strawberries to the United States come from Mexico, which also supplies most of the fresh strawberry imports. Chile and China are the next two largest suppliers of imported frozen strawberries to the United States. Both ship far fewer quantities of frozen berries to the U.S. market than Mexico but their shares of U.S. import volume have been rising in recent years. Frozen strawberry imports averaged 120 million pounds annually during 2001-2004, up from an average of 64 million pounds in 1990-95.

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